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L3: Entry 9 of 14 File: USPT Aug 27, 2002

US-PAT-NO: 6440735
DOCUMENT-IDENTIFIER: US 6440735 B1
**** See image for Certificate of Correction ****

TITLE: Dendritic cell vaccine containing telomerase reverse transcriptase for the treament of cancer

DATE-ISSUED: August 27, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Gaeta; Federico C. A.	Mountain View	CA		

US-CL-CURRENT: 435/372.2; 424/93.21, 435/372.3

CLAIMS:

What is claimed is:

1. A composition comprising antigen-presenting cells containing a polypeptide that comprises at least 6 consecutive amino acids of telomerase reverse transcriptase (TRT; SEQ. ID NO:2), and a pharmaceutical carrier suitable for human administration; whereupon administration of the composition to a human subject induces an anti-TRT immunological response.

2. The composition of claim 1, wherein the antigen-presenting cells are dendritic cells.

3. The composition of claim 1, wherein the antigen-presenting cells have either been pulsed ex vivo with a polypeptide containing said consecutive amino acids, or modified ex vivo with a polynucleotide encoding said consecutive amino acids.

4. The composition of claim 1, wherein the polypeptide comprises at least 8 consecutive amino acids of SEQ. ID NO:2.

5. The composition of claim 1, further comprising a cytokine.

6. The composition of claim 5, wherein the cytokine is GM-CSF or IL-2.

7. The composition of claim 1, wherein the immunological response comprises both TRT-specific antibody and TRT-specific cytotoxic T cells.

8. A method for preparing the composition of claim 1, comprising isolating mononuclear leukocytes from peripheral blood, optionally fractionating or differentiating the leukocytes, and then either: a) pulsing the leukocytes with a polypeptide containing said consecutive amino acids; or b) modifying the leukocytes with a polynucleotide encoding said consecutive amino acids.

9. The method of claim 8, wherein the leukocytes are pulsed with a polypeptide containing 8-12 consecutive amino acids of SEQ. ID NO:2.

10. The method of claim 8, wherein the leukocytes are modified with a polynucleotide encoding at last 12 consecutive amino acids of SEQ. ID NO:2.

11. A method for eliciting an anti-TRT immunological response in a subject, comprising administering to the subject the composition of claim 1.

12. The composition of claim 1, wherein the antigen-presenting cells contain a plurally of such polypeptides.

13. A method for preparing cytotoxic T cells specific for telomerase reverse transcriptase (TRT), comprising combining T lymphocytes ex vivo with antigen-presenting cells containing a polypeptide that comprises at least 6 consecutive amino acids of telomerase reverse transcriptase (TRT; SEQ. ID NO:2), so as to cause T lymphocytes specific for TRT to proliferate.

14. The method of claim 13, wherein the antigen-presenting cells are dendritic cells.

15. The method of claim 13, wherein the antigen-presenting cells have been pulsed ex vivo with the polypeptide.

16. The method of claim 13, wherein the antigen-presenting cells have been modified with a polynucleotide ex vivo so as to express the polypeptide.

17. A cytotoxic T cell produced according to the method of claim 13.

18. A method for providing a subject with T cell immunity against target cells bearing TRT antigenic peptides, comprising administering to the subject cytotoxic T cells according to claim 17.

19. An isolated cytotoxic T cell specific for telomerase reverse transcriptase (TRT).

20. The cytotoxic T cell of claim 19, which is a CD8+ Class-I restricted T cell.

21. A pharmaceutical composition comprising a plurality of cytotoxic T cells according to claim 19 in a pharmaceutically acceptable carrier suitable for human administration.

22. A method for providing a subject with T cell immunity against target cells bearing TRT antigenic peptides, comprising administering to the subject cytotoxic T cells according to claim 19.

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L5: Entry 5 of 10 File: USPT Feb 11, 2003

US-PAT-NO: 6517834
DOCUMENT-IDENTIFIER: US 6517834 B1

TITLE: Purified telomerase

DATE-ISSUED: February 11, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Weinrich; Scott L.	Chesterfield	MO		
Atkinson, III; Edward M.	Seattle	WA		
Lichtsteiner; Serge P.	Encinitas	CA		
Vasserot; Alain P.	Berkeley	CA		
Pruzan; Ronald A.	Palo Alto	CA		

US-CL-CURRENT: 424/94.5; 435/194, 435/252.3, 435/320.1, 435/91.3, 530/412, 530/413, 536/23.2

CLAIMS:

What is claimed is:

1. A preparation of mammalian telomerase protein that is at least .about.3,000-fold more pure (in terms of telomerase activity per weight of protein) than a crude extract of 293 cells, wherein a complex of the telomerase protein with telomerase RNA component has a molecular weight of 200-2,000 kDa.

2. The preparation of claim 1, which is at least .about.20,000 fold more pure than the extract.

3. The preparation of claim 1, which is between .about.3,000 and .about.60,000 fold more pure than the extract.

4. The preparation of claim 3, which is at least .about.20,000 fold more pure than the extract.

5. The preparation of claim 1, wherein the telomerase protein is human.

6. Purified human telomerase protein having at least 2,000-fold increased purity compared with crude extract of cells from adenovirus-transformed kidney cell line (293 cells), which when associated with telomerase RNA component has DNA polymerase activity and a molecular weight of 200-2,000 kDa.

7. The telomerase protein of claim 6, which is at least .about.20,000 fold more pure than the extract.

8. The telomerase protein of claim 6, which is between .about.3,000 and .about.100,000 fold more pure than the extract.

9. The telomerase protein of claim 8, which is at least .about.20,000 fold more pure than the extract.

10. An extract of a cell expressing mammalian telomerase protein, wherein the extract has measurable telomerase activity in 0.2 .mu.g of protein when quantified

in a telomere primer elongation assay in which .sup.32 P-labeled primer extensions are separated on a gel and detected using a phosphoimager screen.

11. The purified cell extract of claim 10, wherein the telomerase activity is enriched between .about.3,000-fold and .about.100,000-fold compared with a crude extract of cells from adenovirus-transformed kidney cell line (293 cells).

12. The preparation of claim 1, wherein the telomerase protein is associated with telomerase RNA component.

13. The preparation of claim 12, wherein the telomerase protein binds to an oligonucleotide selected from oligo 5 (SEQ. ID NO:3), and M2/TS (SEQ. ID NO:8).

14. The preparation of claim 12, which has measurable telomerase activity in 0.2 .mu.g of protein when quantified in a telomere primer elongation assay in which .sup.32 P-labeled primer extensions are separated on a gel and detected using a phosphoimager screen.

15. The telomerase protein of claim 6, associated with telomerase RNA component.

16. The telomerase protein of claim 15, wherein the telomerase protein binds to an oligonucleotide selected from oligo 5 (SEQ. ID NO:3, and M2/TS (SEQ. ID NO:8).

17. The telomerase protein of claim 15, which has measurable telomerase activity in 0.2 .mu.g of protein when quantified in a telomere primer elongation assay in which .sup.32 P-labeled primer extensions are separated on a gel and detected using a phosphoimager screen.

18. A method for assessing a regulator of telomerase, comprising measuring telomerase enzymatic activity of a telomerase preparation according to claim 17, in the presence of the regulator.

19. The method of claim 18, wherein the regulator is a telomerase inhibitor.

20. The method of claim 18, wherein the regulator is a telomerase activator.

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L5: Entry 10 of 10 File: USPT Jul 17, 2001

US-PAT-NO: 6261836
DOCUMENT-IDENTIFIER: US 6261836 B1

TITLE: Telomerase

DATE-ISSUED: July 17, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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US-CL-CURRENT: 435/325; 435/320.1, 435/7.1, 435/7.2, 514/2, 530/324, 530/350, 536/23.2, 536/23.5

CLAIMS:

We claim:

1. A synthetic or recombinant human telomerase reverse transcriptase (hTRT) protein, or a variant thereof, or a fragment thereof, wherein said variant is encoded by a polynucleotide that hybridizes under stringent conditions to a polynucleotide having a sequence complementary to SEO ID NO: 224, and wherein said hTRT protein, variant, or fragment has telmerase catalytic activity when complexed with a telomerase RNA.

2. A composition comprising the hTRT protein of claim 1, and further comprising an RNA, wherein the hTRT protein and the RNA form a telomerase ribonucleic acid complex.

3. An isolated, synthetic, substantially pure, or recombinant polynucleotide comprising a nucleic acid sequence that encodes the hTRT protein, variant or fragment of claim 1, or the complement of said nucleic acid sequence.

4. The polynucleotide of claim 1, comprising a promoter sequence operably linked to the sequence encoding the hTRT protein.

5. A isolated cell comprising the recombinant polynucleotide of claim 3.

6. A cell of claim 5 that is a eukaryotic cell.

7. An isolated, synthetic, substantially pure, or recombinant polynucleotide encoding a full-length naturally occurring human telomerase reverse transcriptase (hTRT) protein, said protein having 1132 amino acid residues.

8. An isolated, synthetic, substantially pure, or recombinant polynucleotide encoding a full-length naturally occurring human telomerase reverse transcriptase

(hTRT) protein, said protein having 1132 amino acid residues, wherein said polynucleotide comprises the hTRT protein encoding sequence of bases 56 to 3451 of Seq. ID. No. 224 (FIG. 53).

9. The polynucleotide of claim 3, wherein the encoded protein has 1132 amino acid residues.

10. The polynucleotide of claim 9, wherein said polynucleotide comprises an encoding region of bases 56-3451 of SEQ ID NO: 224.

11. A method of preparing recombinant telomerase, said method comprising contacting the recombinant hTRT protein of claim 1 with a telomerase RNA component under conditions such that said recombinant protein and said telomerase RNA component associate to form a telomerase enzyme capable of catalyzing the addition of nucleotides to a telomerase substrate.

12. The method of claim 11, wherein said contacting occurs in a cell which has been engineered to express recombinant hTRT.